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Arbor Day and Bird Day

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BULLETIN TO THE SCHOOLS

VOLUME 31
NUMBER 7

THE UNIVERSITY OF THE STATE OF NEW YORK

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COVER PICTURE:

The Goldfinch, by Edmund J. Sawyer

THE UNIVERSITY OF THE STATE OF NEW YORK
BULLETIN TO THE SCHOOLS

Issued monthly during the school year by the State Education Department

CHARLES F. PROBES, *Editor*

This bulletin is sent without charge to all schools and educational institutions of the State. To others it will be mailed postpaid for 50 cents a year, 10 cents for single copies.

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The University of the State of New York

Bulletin to the Schools

VOLUME 31 MARCH 1945 NUMBER 7

Arbor Day and Bird Day

AMONG the fragments of easily remembered songs familiar to our generation there comes to mind Nora Perry's

THE COMING OF SPRING

There's something in the air
That's new and sweet and rare—
A scent of summer things,
A whir as if of wings.

And though on plain and hill
'Tis winter, winter still,
There's something seems to say
That winter's had its day.

And to-morrow or to-day
The brooks will break away
From their icy, frozen sleep,
And run, and laugh, and leap.

So, silently but swift,
Above the wintry drift,
The long days gain and gain,
Until on hill and plain,

Once more, and yet once more,
Returning as before,
We see the bloom of birth
Make young again the earth.

I have the honor to designate April 13th as Bird Day and April 27th, May 4th or May 11th as Arbor Day in accordance with the convenience of the locality.

George D. Stoddard

Commissioner of Education

Selecting a Perfect Tree

RICHARD E. CONLEY

What to look for in choosing a tree and how to care for it to keep it beautiful and healthy

A TREE, like a man, is a living organism. It follows, then, that in order to find the perfect tree we must look not only for visible evidence of symmetry and beauty but also for functional perfection.

Let us consider, in a general way, the quality of beauty in trees. There is no norm or set criterion for beauty in trees. Beauty and perfection are of themselves intangible and, like all essential attributes, almost defy definition. What is beauty in one tree constitutes ugliness in another. With this point in mind, let us briefly examine some of the species.

The Norway maple, like the native sugar maple, should express symmetry by having one straight leader or central stem from ground to tip. From this main trunk should spring numerous lateral branches of about equal width, starting from the trunk at six or seven feet above the ground.

Unlike the Norway maple, the American elm should never have one central leader. The most beautiful type is the vase or wineglass shape. Instead of one central trunk, the tree's top may be divided into several acute-angle forks or crotches.

Then the oaks — the red, the scarlet and the pin oaks — all should have a single central stem or leader. The immature pin oak, truly pyramidal in form should have a well-proportioned top, tapering with evenness and Grecian symmetry from a broad-based head which starts about six or seven feet above the ground to a pin-pointed tip. The red and scarlet oaks, while having the same general characteristics, can be much more loosely branched, can spread more freely and still be true to type.

The white oak is the one exception, great spreading and uneven branches being characteristic.

Considering the evergreens, we find that the hemlocks, spruces and firs conform to pyramidal outlines. The yews and pines, and almost all of the broad-leaved types such as mountain laurel and rhododendrons, tend to widespread, uneven and irregular branching.

But enough of shapes and outward appearances.

Trees, like man, are often judged too quickly and too much by surface characteristics. Care and training, nutrition and those underlying reservoirs of health and energy, the root systems, are all important. Even these, hidden as they are, can be gauged and determined by visible and outward signs apparent to the initiate. Look for full and rich deep-green foliage; freedom from parasites and pests; uniform, steady growth indicated by equal, natural spacing between the whorls of yearly shoots or branches; a compact, fibrous root system (which can be seen only by digging up a sample); wide and ample spacing of the plants in the nursery row — an evidence of proper transplanting; clean weed-free ground beneath the trees and in between the rows — a sure sign of frequent cultivation.

In our search for the perfect tree, we must keep in mind the design or purpose for which this plant is to be selected. A squat, several-stemmed Canadian hemlock, while ideal for a hedge or screen planting, may be entirely unsuitable for use as a specimen on the front lawn. A

Spreading Branches Are Characteristic of the White Oak

shapely flowering dogwood, with single trunk and balanced head, may fit the formal garden; but a lop-sided brother might overhang the natural pool or fit the woodland border to perfection.

Nursery trees may easily become imperfect if constant care is not exercised. Carelessness will quickly result in the development of noticeable imperfections — crooked stems, one-sided heads, starvation evidenced by sickly color and stunted growth, the rapid increase of disease and insect pests, and course, uncontrolled root development.

When you next visit a nursery as a prospective buyer, if you observe these methods being put into practice, you may buy with the assurance that the nursery's finished product will approach that perfection we are discussing.

First is the matter of soil. If the soil is poor, too heavy or too light, it must be adjusted. The planting and plowing under of green crops or legumes, the application of commercial fertilizer or barnyard manure — all enrich a lean soil. The addition of leaf mold from the forest, or the mixing of peat moss or some other form of humus, will lighten a heavy soil and add organic matter to a light one.

Both in the initial planting and in later transplanting, it is essential that trees be so spaced in the rows that each plant will have ample light and air.

I can not stress too much the value of frequent cultivation of the soil around each tree during the growing season. The hard, sun-baked crust which forms on uncultivated soil prevents the ready absorption of water.

Another reason for cultivation is to prevent the evaporation of the moisture stored within the ground.

A third benefit of frequent cultivation is the elimination of weeds in the bare areas about the tree bases. Weeds steal from the soil much of the nutriment and moisture so vital to the tree.

Periodic spraying at the proper times is necessary. You can, as a rule, deduce a plant's freedom from disease and serious insect pests by its general health and appearance. Mutilated foliage and a sickly yellowish color in deciduous trees and browning needles or dying branches in evergreens are signs of weakness and ill health.

Pruning and shearing are factors in the development of fine trees. In shade trees, the formation of undesirable crotches may be avoided by judicious pruning; uneven growth of side limbs is checked; dead inside branches are removed. This training while the tree is in the formative state insures symmetry and beauty in maturity. Many evergreens, unless moderately sheared, tend to a loose and ungainly habit. Repeated shearing not only develops shapeliness, but, by inducing denser growth, makes a stronger and more compact plant.

So far we have spoken only of the upper or visible half of the tree. But remember, the unseen half — the roots — is equally important. To prepare a tree properly for safe and final transplanting to your grounds, the nurseryman must practise root pruning.

By "root pruning" I mean this: The nurseryman measures off a circle on the surface of the ground, using the tree trunk for the center. Usually a one-foot circle is used for small plants, with circles of to 12 and 15 feet in diameter for very large trees. He then digs around the outer edge of this circle as deep down in the ground as the roots may run, generally from one to two and one-half feet, cutting off the roots at the circle's edge with a spade or other sharp instrument. The dirt is then filled back, and the operation is repeated in three, four or five years, using a slightly larger circle.

(*Radio Garden Club Digest*)

Notes on the Chimney Swift

GUY A. BAILEY
Geneseo

: : : : : :

At last it is discovered that at least some of these birds pass the winter in Peru

THE BIG NEWS item from the bird world for 1944 comes out of Peru. For many years now we have tried to find out where the chimney swifts go when they leave the United States. Bird people have speculated about it. DeKay in his book of *New York State Birds* published a hundred years ago states that they entered the tropics but where in the tropics was not revealed. More recently others have said it was in Central America and still others in Brazil.

Now we have word from Peru that Indians found chimney swifts wearing bird bands on their legs. These bands were returned to Frederick C. Lincoln, senior biologist of the United States Fish and Wild Life Service in Washington, D. C., and the numbers on the bands checked. These birds had been banded in the United States. This does not mean that Peru is the only country where chimney swifts pass the winter season.

Photograph by Guy A. Bailey

Nest of Chimney Swift Built in a Wheat Bin on First Floor of a Barn in Tully Valley

Chimney swifts arrive in New York State late in April or in early May. The date is determined by the abundance of flying insects available for them in the air. Generally speaking, their entire food supply is procured in this way. Since they do not alight on trees, fences or on the ground it is possible that as they skim ponds and lakes they pick up insects on the water. It is said that caterpillars suspended on their silken threads swinging down to the ground are sometimes picked off by the alert swifts.

In New York State they begin nest building late in May or in early June. Their nests are built of small sticks broken off by the birds' feet as they fly through the tops of dead trees. The flight of the bird is checked but not stopped in the process. The sticks are covered with a gelatinous saliva and stuck to the nesting site. Other sticks are added until a saucer-shaped nest is built. The nest has no lining and is too shallow to be rated a first-class nest by the usual standards. It is in a spot protected from the wind, however, but not from the rain when it is in a chimney. Heavy, driving rains sometimes loosen the nests and even drive the nesting birds down to the bottom, where they may die.

Photograph by Guy A. Bailey

Adult Chimney Swift Hovering Over Young

Photograph by Guy A. Bailey

Young Chimney Swifts Crowding in a Nest in the Gable End of a Barn in Tully Valley

The nest turns out to be too small even for the partly grown young (see illustration). When they are fully grown they overflow both above and below the nest and cling with the aid of sharp toenails to the chimney, tree or building where the nest happens to be placed.

From my lone observation of the later home life of a pair of chimney swifts it

seemed to me that adults tended to crowd the young out of the nest. This forced them to cling to the vertical sides of the barn. In this way they learned to practise early in life what they would do when at rest later. Chimney swifts roost before and after breeding in large chimneys, ventilating shafts and in some cases, still, in large hollow trees. The hollow trees are growing fewer and the large ventilating shafts and chimneys are growing more numerous. So now it is not easy to find these birds in the old-fashioned trees of their ancestors. Audubon examined such a tree and counted 9000 birds.

Some tragedies have come upon chimney swifts in these concentrations in large chimneys where heavy storms strike.

Forbush in his *Birds of Massachusetts*. volume II, mentions such storms. In one place three wheelbarrow loads of dead swifts were taken from the base of a smokestack. In another place bushels of bodies were removed. It is not uncommon to find dead young or adults in any chimney that has been used by them over a period of years.

Late in October they begin to gather in flocks, using the big ventilating shafts, chimneys and hollow trees for roosting at night and during severe storms. We do not have the dates of their arrival in Peru but we do know that they fly over Central America and not over the Gulf of Mexico.

We may later learn that a tropical storm and a hollow tree in Peru is responsible for the tragedy that gave us the news about the winter homes of the chimney swifts or chimney swallows as they are frequently called.

"What Kills Cock Robin?"

GORDON M. MEADE M. D.
Strong Memorial Hospital, Rochester

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A physician reports on dangers and ailments that cause bird mortalities

IN THE NURSERY RIME it was the sparrow with his bow and arrow. But many of you have probably wondered what finally happens in real life to the hosts of birds you see around you.

First, let us see what happens to the nestlings and young birds just out of the nest. It is probable that not more than half of the birds which hatch each year live to the end of their first summer. The others die from starvation (death of the parents, lack of food), drowning and chilling from rain while in the nest, freezing and chilling from snow and sleet (the early nesters), being blown to the ground from nests by wind, falling from nests, killing by animals, birds, turtles and large fish (ducklings).

If they live through their first summer, they still are victims of many of these same things and others in addition. Most of them probably do not live more than three or four years. Some of the more fortunate ones will reach ages of six to eight years, and a few live longer.

The number of birds killed each year by colliding with man-made objects is large. This naturally occurs most frequently at night when low flying migrants strike such objects as towers, lighthouses, tall bridges, chimneys and telephone and power lines. The Washington Monument is a well-known cause of many such casualties. On September 12, 1937, between 10.30 p. m. and midnight, 576 (one every 10 seconds) dashed to death against the sides of the monument.

Perhaps on your way to school in the summer you have seen the bodies of birds on the road where they had fallen after colliding with automobiles. Several counts of the numbers of such deaths have been made and one observer estimated that about 750 birds are killed this way in the United States every day.

In your biology classes you have studied something about human diseases and have learned that many of them are caused by extremely small organisms called bacteria. Birds also have diseases caused by bacteria. One of the most important, because it sometimes kills thousands of wild ducks, is called botulism. It is caused by the ducks eating decaying plants which contain the botulinus germ. The United States Government is working to find ways to prevent this disease.

Just like humans, birds apparently often have pneumonia although we are not sure that it is caused by the same kind of bacteria. Sometimes, wild birds may have tuberculosis. It is very like human tuberculosis but not exactly the same. There are also a number of kinds of bacteria which give birds illness of their intestines.

Everyone nowadays has heard of infantile paralysis, smallpox, measles and mumps. These are human diseases caused by another type of organism which we call a virus. The viruses are different than the bacteria and we know less about them. Birds do not have the human diseases I have just mentioned, but they do have other kinds of virus diseases. One of these is called psittacosis. This is a disease of parrots, love birds and some finches. Humans can contract the disease from sick birds and can be made very ill. That is why the Government no longer allows such birds to be brought into this country. In the past few years a very similar disease called ornithosis has been discovered in the pigeons of our parks and cities and several cases have been reported of persons who handled the sick pigeons becoming ill themselves. The disease usually affects the lungs much like pneumonia.

Strangely enough there is one virus disease which seems to affect horses, birds and humans. It has a long name — equine encephalomyelitis, which means an inflammation of the brain of horses. It was first discovered in horses but now we know that pheasants and egrets can have it and also humans. It is a kind of "sleeping sickness."

There are other virus diseases of birds — one causes small wartlike growths on the feet of sparrows, and another causes an ailment in owls.

If you have read the papers carefully, you have learned of the wonderful benefits in war medicine from the use of penicillin. This is made from a mold somewhat like the mold you see in old bread. Oddly enough molds related to this one can also cause serious disease if they get into the lungs of animals and birds. Quite often birds are killed by the growth of such molds in their lungs. Most often the birds are ducks, geese, swans, gulls and owls.

One of the most serious problems that our Army and Navy have to face in foreign countries is malaria, a disease caused by an organism that gets into the body through the bite of a mosquito. Many kinds of birds also have malaria although they do not seem to be made very ill by it as humans are.

Numbers of birds die from various kinds of poisoning. Many ducks are killed by eating lead shot from the mud in waters where there has been much hunting. The shot drop into the water, the ducks eat them, and the lead in the shot is very poisonous to them. Once in a while birds are made ill by the spray used on trees. An unusual episode of poisoning occurred at Saranac Lake a few winters ago when large numbers of crossbills, purple finches and pine grosbeaks were made ill from feeding on a salt (calcium chloride) which was sprinkled on a highway to soften the ice.

So you see, the birds do not have an easy time of it, but are subject to all sorts of dangers and ailments.

The Care of a Fledgling

LOUISE C. BLAKE
Potsdam

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An "adopted" robin becomes a pet of an ardent birdlover

IN STUDYING and learning the nature, character and — may I say personality — of a bird, one of the most successful ways is to live intimately with it, such as by adopting a fledgling and rearing it. This, of course should not be done except under circumstances of emergency.

Under these conditions I "adopted" a young robin that apparently was a weakling of an overflowing nest of four.

The day the fledglings left the nest, which I had been watching since the first day the parent robins placed the first grass and mud for their nest, I noted that one of the young birds merely toppled out of the nest to the ground and remained there, while the others quickly left for more distant points.

Keeping close watch of the young bird throughout the day, I noted that the parent birds were evidently too busy following the stronger fledglings to pay any heed to the weakling, that uttered pitiful hungry calls which were not answered. By nightfall I decided I should do something about it as there was danger of rats, snakes or other vermin harming the bird. Making an improvised nest of soft cotton in a basket, I placed "Robin," as I was to call her, in the nest, after giving her a tasty bit of supper of soft bread soaked in milk and a few bits of earthworm.

Photograph by Louise C. Blake
"Robin" Poses on Window Sill

The next morning there was nothing to be seen of the parent birds, and I decided it was my job to take care of Robin. The next few weeks were among the most pleasurable of my life, as well as the busiest. Robin's wide hungry mouth was continually open for food, and she seemed to relish and thrive on my varied diet of bread and milk, earthworms and berries.

Robin had the run of my cottage, and as she grew and gained strength, she persisted in following me from room to room. When I was preparing a meal in the kitchen, she was either on my shoulder or standing on the broad shelf watching me. When I lay down in the porch swing to read, Robin immediately flew over and cuddled down on my pillow near my head. I often would get up and move to some other part of the porch, just to see her follow me, which she always did.

Robin and "Billy," my Persian cat, were the best of friends. I had taught Billy, when he was a kitten, that birds were to be respected by him, and he had always followed my training. So, Robin and Billy would often be found on the same pillow in the sun.

Photograph by Louise C. Blake

"Robin" Loved Her Bath

One of the amusing and surprising things I learned from Robin was that birds love to play, the same as other animals. Robin's chief sports were playing with a piece of string, and attempting to pull tufts from a pillow, and when she caught me laughing at her, she would utter her pleasant little chirp.

If I had to leave the cottage for any length of time, Robin was placed in a cage, for her safety, and much to her disgust. And when she heard my voice down the trail, she would always start calling to me. Or, if I first called to her from a distance, she would always answer.

The daily bath was Robin's chief delight. An aluminum cake tin served as her bathtub, and regardless of weather, she had her daily plunge, splashing the water all over the table and getting thoroughly wet. Then she seemed to enjoy sitting in the sun to dry and preen her feathers.

Robin was slightly mischievous at times. One day when I was entertaining for dinner I found Robin's tracks directly through the center of a lemon meringue pie. We did not have dessert that day.

The day arrived when I decided Robin was strong enough to take care of herself, and she was released outdoors. For several days after that, she remained around the cottage, alighting on my shoulder when I went outside. Then one morning I missed her and she was gone for ten days, only to return again. She remained near my cottage for some time, but had seemed to enjoy association with others of her species, and soon afterward I left my summer cottage for the season, with the sober thought that it was probably my farewell to Robin.

But in this I was mistaken, for the next spring when I returned to my cottage, I heard one morning a robin singing loudly near my back door. For some unexplainable reason, I had the feeling it was Robin, and on going outdoors, I found her. Although she was much changed with a beautiful new mature covering of feathers, there could be no mistaking that she was my adopted Robin of the previous summer when she excitedly fluttered around the branches of a tree within arm's length of me, although she did not alight on my shoulder as was her former habit. No doubt her winter associations among strangers and her wild nature had slightly changed her.

Watching her from time to time, I noted her interest in other robins. Then came another big surprise. One day I noticed a pair of robins starting to build their nest on my window ledge. Robin and her mate were going to make their home with me for the season. Later, after the period of incubation, two young birds were the interest of Robin and her mate, to say nothing about the adopted mother who felt herself now a grandmother.

Photograph by Louise C. Blake

The Author Becomes a "Grandmother"

Wild Plants for Tame Gardens

FREDERICK HOUGHTON
Buffalo

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Here are listed a few of the many American wild flowers lovely enough to use in cultivated gardens

ALL OUR GARDEN flowers were originally wild plants of woodlands and fields. Some of these wild plants were so beautiful or useful that people brought them to their homes and planted them where they could enjoy or use them. Of these plants they kept and cultivated those that were most beautiful or useful, and after long years this selection and cultivation resulted in making them finer in every way than those in the wild state.

When immigrants came to this country from Europe they brought with them from their European gardens many plants which they loved or used, and planted them in gardens about their new homes. But here they found many new and strange plants which grew wild, and although these were as lovely and useful as those with which they were familiar, they were not valued so highly as those which were dear to them as reminders of their old homes. So their gardens were made up mainly of cultivated European plants.

As time went on our native plants began to be appreciated. Explorers searched our woodlands and mountain slopes for plants which might serve under cultivation as valuable additions to our gardens. Many of these American plants were sent to Europe, where they were cultivated and improved, and some like our lovely wild asters have returned to us under new names. Some, however, have been kept in gardens here, the rhododendrons and azaleas for instance. Some nurserymen are now beginning to advertise seeds and plants of our wild flowers and a few are specializing in them, yet comparatively little has been done by Americans to select and hybridize them.

There are actually a great many American wild flowers that are lovely enough to use in our cultivated gardens. Those named in the short list below have been tried in gardens in western New York, in soil that is acid or limy or neutral, in sunlight or shadow, in temperatures which range from 90 degrees of heat to 30 degrees below zero. Under these varying conditions they have grown, thrived and persisted.

A few of these plants have been raised from seeds. Most, however, have been collected from their native environments and transplanted to our garden. Success in establishing them there has resulted from proper collecting, careful transporting and careful transplanting, and may be attained by following a few simple instructions.

When a plant is dug, as many of its roots as possible must be taken up with it. When the plant is being dug, the type of soil and the light conditions in which it thrives must be noted, for a plant which grows vigorously in full sun in limy soil will die if planted in acid soil.

As soon as possible after digging a plant its roots should be wrapped in wet newspaper or sphagnum moss, and kept wet until it is transplanted.

To transplant, select a spot where the conditions of soil, light and moisture are as nearly as possible the same as those

where the plant grew. Dig a hole large enough to accommodate the roots without crowding. Fill this with wood soil or good neutral soil. If the plant grew in limy soil, mix in some hydrated lime, if in acid soil, mix in plentiful peat, oak or hemlock sawdust, or some alum. In this mixture dig the hole for the plant. Tread the bottom of the hole to pack the soil. Spread the roots of the plant carefully on the bottom of the hole, keeping the crown just at or a little below the surface. Fill the hole with good soil and tread it in until it is firm. Cover the soil about it with two or three inches of peat or sawdust or compost.

A Few Tall Perennials for Background

Thalictrum polygamum, tall meadow rue, rises to a height of six feet, with finely cut leaves and thick panicles of small white flowers. It transplants readily, persists for years and makes a fine background for a perennial bed.

Cimicifuga racemosa, black cohosh, throws up a stiff wand crowned by a beautiful cylinder of fluffy white flowers. It transplants readily and persists for years.

Polygonatum commutatum, giant Solomon's-seal, rises in a beautiful curving arc to a height of four feet. Its leaves are ornamental and its small green flowers are pretty. Its thick rootstock transplants easily.

Photograph by Frederick Houghton

The Giant Solomon's-Seal Is a Very Decorative Plant

Photograph by Frederick Houghton

Lilium Superbum Bears Abundant Blossoms on Its Tall Stalk

Heracleum lanatum, cow parsnips, is a bold, rather coarse and wooly giant six feet tall, with a huge head of white flowers. It is an excellent background plant, but it will spread unless checked.

Angelica (*atropurpurea* and *villosa*). Both species of Angelica are similar to Heracleum, in being tall rather coarse plants, but decorative and good background plants.

Cassia marilandica, wild senna, sends up stiff arching stems, with a succession of pinnate leaves, crowned by clusters of yellow pea-shaped flowers. It is rather light and dainty in habit and persists without spreading.

Lilium superbum, Turk's-cap lily, rises on a stiff stem to a height of six feet

from good garden or alluvial soil, and bears a pyramid of a dozen or more of recurved orange flowers. This is a good lily, equal to any of the exotics of our gardens.

Plants of Medium Height

Baptisia australis is perhaps the most satisfactory native plant for a garden. Its blue stem three feet tall, with its smooth pale blue-green leaves and lovely pea-shaped blue flowers make it delightful. It is persistent, with no bad habits, it seeds itself readily, and in every way it is excellent.

Lilium philadelphicum, wood lily, is a low-growing lily with upright reddish or orange blossoms which are much better formed and held than most other lilies. It transplants readily and persists if the soil is made acid.

Smilacina racemosa is one of the excellent plants for shade under shrubs. From a thick rootstock lying close to the surface rise gracefully arching stems to a height of two feet, each crowned by a thick panicle of creamy white small flowers. Its leaves, blossoms and fruit are all pretty.

Photograph by Frederick Houghton

The Charming Little Philadelphia Lily Does Well in Acid Soil under Shrubs

Photograph by Frederick Houghton

Masses of Gray-Green Foliage and Clean Blue Flowers Make Mertensia an Ideal Ground Cover

Asclepias tuberosa, orange milkweed, provides the most glowing color of the garden. It grows from a thick rootstock. Its stems lie close to the surface and produce a profusion of brilliant orange flowers. It does not transplant particularly well, but its thick rootstock cut into pieces and replanted will produce new plants.

Mertensia virginica. While I am writing this our Mertensia is just about to break out into its lovely blue bloom. It is mixed up in a bed of Scilla, Chionodoxa and Crocus which have just finished blooming. Like Baptisia its foliage is cool gray-green and its flowers are clear blue. Its deeply set thick rootstock can be easily transplanted in early spring, and it will bloom at once. It makes a good ground cover under shrubs, but it dies down in early summer; so to prevent it from being destroyed by cultivation it should be plainly marked.

Monarda didyma is an upright mint with rather brilliant red flower heads. *Monarda fistulosa,* wild bergamot, has an abundance of lavender colored flowers. Both are good. *M. didyma* rather prefers

a damp place, but it does well if mulched, but *M. fistulosa* does well in any good garden soil. Both are mint scented.

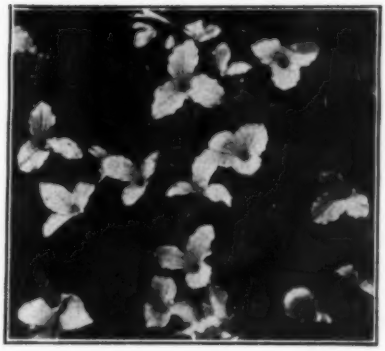
Lobelia cardinalis, cardinal flower, carries a spike of the most vivid red in the garden. It prefers a damp place, and does not do well in dry soil. *Lobelia siphilitica,* the great lobelia, is equally conspicuous, but its flowers are blue, as vivid as the cardinal is red. It also prefers a damp soil, but will grow if heavily mulched. Both are good plants if they can be given their proper environment.

Low Plants for the Front of the Border

Sanguinaria canadensis, bloodroot, is one of the loveliest of spring flowers. Its rootstock lies close to the surface and is easily dug and transplanted. Its flowers are pure white stars an inch across, and its gray-green leaves are beautifully shaped. It spreads into wide mats which resemble drifts of snow. It makes a good ground cover under shrubs. Altogether it is most desirable.

Photograph by Frederick Houghton

Lovely as Hepatica Is in the Spring Woods, It Does Far Better in a Cultivated Garden



Photograph by Frederick Houghton

The White Trillium Masses Well as Ground Cover under Shrubs

Asarum canadense, ginger root, is not remarkable for its flower which is red and half buried in the soil, but its gray-green leaves and stems lie flat on the surface and make a soft pleasing ground cover, especially when it is mixed with bloodroot.

Iris cristata is the smallest of the Iris family. Its infantile rootstocks lie just at the surface, and from them appear early in spring small but perfectly formed iris flowers. It spreads into wide mats and should be a good rock plant. It is a really dainty and lovable little plant.

Hepatica acutiloba, one of the first of the spring flowers, and perhaps the best-loved, should be in every cultivated garden to blossom with Crocus, Scilla, Snowdrop and Chionodoxa. Its clustered roots do not transplant particularly well, but if carefully dug, and planted immediately in neutral wood soil and a thick mulch of sawdust around it, there will be produced a plant very far superior to those in the woods. It certainly takes well to cultivation.

Hepatica triloba is practically the same, except that it seems to prefer acid soil.

Trillium grandiflorum, the white trillium, does best and looks at its best in masses. Singly, a white trillium is a beautiful plant, but it has not the loveliness of Sanguinaria or the daintiness of

Iris cristata. Massed on a wooded slope it is a thing of beauty. It makes good ground cover under shrubs.

Viola (*cucullata* or *papilionacea?*) the common blue violet. Even the authorities differ in their classifications. At any rate, the common blue violet which adorns the roadsides in early spring is a most excellent plant, like Polemonium, to edge flower borders. During most of the season it is trim and tidy, carries an abundance of pretty flowers, can be transplanted easily and perpetuates itself. A single line along the front of a flower bed makes a delightful edging.

Polemonium reptans serves beautifully as a border for flower beds. It is neat in habit, low in stature, lovely in its blue flowers, without a bad habit. It transplants without difficulty, and persists, seeding itself. It is an excellent border plant or edging plant.

The Goldfinch

EDMUND J. SAWYER

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The gold of this most joyous of birds is not in his color alone; it is also in the golden treasure of his lilting spirit

THIS IS the little finch often called "wild canary" for the particular quality of its notes and the color of its body plumage. That far the name is not inapt. Nor, in regard to color, does the name goldfinch fit the bird much better; both names apply to the male, but his wings, tail and forehead are jet black, with broad edgings of white on the tail and chief wing feathers. However, as "not all is gold that glitters," not all golden value is in color.

An interesting list of perhaps a dozen birds might be made in which the names would stand, respectively, for the boldest, the wildest, the most curious, the craftiest and so on. In such a list I would be inclined to place the goldfinch as the most joyous. It might be supposed that so shining a mark, so alluring a prey to hawks and shrikes, would exhibit even an extra share of that eternal vigilance which on the part of many other birds makes for obvious alertness at all times and often an air of constant anxiety. But nothing troubles the goldfinch. The gold is not in his color alone. The yellow of his plumage is paler than the golden treasure of his lilting spirit. Some of this gold escapes in his voice, some overflows to stain his dress. Those joyous notes of his perfectly express the eternal song in his heart. He makes no attempt to rival the hymns of the hermit thrush or the veery. He sings to no audience but himself and this audience is naïvely and completely thrilled with its own exquisite sweetness.

I have often seen him alone or with a score of his fellows, in late spring or early summer, gushing irrepressibly in that sweetest imaginable canary-like song minutes on minutes together. Meanwhile he sits, nearly hidden, a yellow leaf among the green; unmoving, except for an occasional tipping of his head to glance below and make sure no vulgar ear attends. If one intrudes too near, forcing him to fly, he will sound a new note, but one which only continues his message of inner happiness, as he now adds visual expression, bounding jauntily off in those great undulations that, like succeeding hillocks on the earth, write freedom and the joy of freedom on the air.

Companions of the Sea

JOHN J. ELLIOTT
Seaford

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These seafaring birds are also companions of man, a Long Island observer reports

BEFORE DISCUSSING our marine birds, a few words seem fitting in respect to our late State Zoologist, the much-beloved Dr Dayton Stoner, by one who sustained a deep loss with his passing last May. It was always a great pleasure to receive his cordial and informative letters and the numerous complimentary copies of reprints, chiefly ornithological, from various scientific journals. As editor of the newspaper column, "Long Island Bird Notes," I am still reviewing these from time to time, with many pleasing comments from our readers.

Of excellent quality is Doctor Stoner's research into the life histories of various birds such as the flicker, phoebe and several species of swallows along with others. His scientific investigations of the bank swallow are the finest on record, with accurate reports on weights, temperatures, measurements etc. Doctor Stoner's helpmate and constant companion during these studies was his faithful wife, who, at the present time, is further perpetuating his name by compiling considerable material left unpublished by his sudden passing.

Many reports during the past four years to Long Island Bird Notes have acquainted the author with the general distribution of offshore birds; and a visit to Bonaventure island, a few miles off the Gaspé peninsula several years ago revealed where some of these species first saw the light of day. Whipped into seething fury by lashing gales, the tumultuous waves, with crests of flying foam, ride the barrier reefs astride the narrow inlets along the south shore of Long Island. Selecting a vantage point along the coast in such weather, one may occasionally see such pelagic species as gannets, shearwaters, petrels and jaegers; also auks, murres, guillemots, puffins and dovekies.

Photograph by John J. Elliott

A Gannet "City" on Bonaventure Island

Shearwaters are great wanderers, arriving off our coast during the warmer months. Three species are most commonly observed; their characteristic flight, three flaps and a short sail, carries them up and over the ocean rollers.

This is also the season for the falcon-like sea birds known as jaegers, which tear through the sky in spectacular dives chasing and plundering the terns.

Although usually found miles off our shores, occasionally in late summer little blackish, white-rumped Wilson's petrels may stray through one of our inlets and

a mile or more up the channel, pursuing their course with a bounding, butterfly-like flight and barely patting the water with their dark, webbed feet, in search of food. Again in winter, our smallest Alcid, the little, black and white dovekie, may not only enter our bays on narrow wings with veering flight, but in stormy weather be driven inland, where helplessly it is unable to fly and expires unless rescued by man. Now and then badly oiled razor-billed auks and murres may come up on the rocky beaches such as at Montauk, along our breakwaters and elsewhere. In recent years floating oil has caused much loss of life among the wintering species in our northeastern waters. Aside from the above-cited cases, our search for pelagic birds has been long and diligent, and consistent observing over a period of years reveals a good list of records.

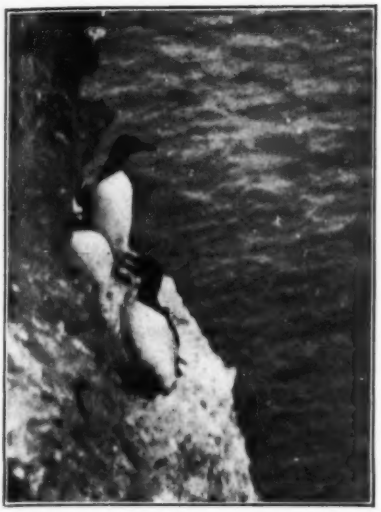
My first observations of nesting pelagic birds came after traveling hundreds of miles into the northeast to Bonaventure island. Here, the giant cliffs stood sheer and abrupt, facing the ocean. It was during late June and the buds on the low clumps of spruce trees were bursting into paler green. Like belated snowdrifts, along the broken ledges on the face of the cliff, hundreds of big, white gannets were nesting; each large, round, elevated nest, composed principally of seaweed, sticks and a few feathers, contained but one, more or less soiled, bluish white, chalky appearing egg. These large, gooselike birds, creamy tinted on their foreparts, with black wing-tips, point a threatening bill and call a harsh *gor-r-r-rok, gor-r-r-rok, gor-r-r-rok* when approached. When the observer is within five or six feet, they waddle hastily off their nests and over the cliff, then glide down to the surface of the ocean some 200 feet below.

Photograph by John J. Elliott

Gannet Ledges on Bonaventure Island

Lying in some of the nests were helpless young a day or two old, bluish gray and naked, while alongside of other nests dead mackerel lay where disgorged by the adults. On the sides of the cliffs, in the smaller nitches, penguin-like, razor-billed auks and Atlantic murres, togged out in their black and white dress suits, guarded their one or two eggs which, much larger on one end, roll in a circle if shuffled about on the flat, bare ledges. A pair or two of puffins with bright, very large, parrot-like bills ran briskly around on the cliff edge, a characteristic not shared by the others whose feet are ill-placed for agility on land.

As twilight settled into darkness on Bonaventure the sonorous calls of the gannets continued throughout the night, though somewhat subdued. On top of the cliffs a diminishing population of Leach's petrels nested in long burrows under the turf. These are cousins of the previously mentioned Wilson's petrel, which nests in the South Atlantic and spends its winter (our summer) off our Long Island shores and other parts of the northern hemisphere. At the time visited, foxes were making inroads on the petrel colony, as evidenced by nearly two



Photograph by John J. Elliott

The Penguin-like Atlantic Murres in Their Dress Suits

dozen wings found under a large, flat, uptilted rock, along with an equal number of gannets' wings, principally birds nesting on top of the cliff.

During the nesting season, a brooding petrel remains on the egg through the day. After dark this bird is relieved by its seafaring mate. The foxes took their toll by digging the helpless petrels out of their burrows. With a wild elfin-like cry they erratically fly on narrow wings through the darkness. During the daylight hours their presence on the island might long remain a secret with one parent concealed in the burrow and none of their seafaring mates in evidence even from the cliff top, being some distance offshore.

Around on the lower side of Bonaventure, a small colony of black guillemots or sea pigeons nested in the rocky caves. They build no nests but lay their two or three, more or less spotted eggs well back out of sight wherever possible. These guillemots are black with large white wing patches and have red legs and feet. When approached they emit a high, squealing whistle, run out of these crevices and then fly out and alight on the ocean until the danger is past.

Back on Long Island we find the Leach's petrel a very rare migrant off the coast during spring and fall. The latest and only record received by Long Island Bird Notes during the past six years was one dead at Orient, found the day following the great, September 14, 1944, hurricane. The black guillemot is a casual winter visitant. Our latest and only record in recent years was one at Jones beach, January 6, 1945; this was the first report for that area. The puffin is also casual and even less frequently recorded than the guillemot.

Often great numbers of shearwaters have been observed off Montauk, although both these and the jaegers are rather irregular. Among the birds under discussion, the gannet is about the most common and the most regularly reported, occurring from late October into December and again in April. The Atlantic murre, mentioned as nesting on Bonaventure, is very rare on Long Island, its place being taken by the Brunnich's murre which ranges farther south to our shores.

One of the great enemies of pelagic birds is oil pumped indiscriminately from ships both at sea and around our harbors. Let us hope that, after the war, legislation will be enacted to prevent this greasy, black, slimy slick from covering the ocean waves and from washing up on our beaches.

Whether plunging gannet, wandering shearwater, veering alcid or bounding petrel, these, God's creatures, are well fitted as companions of the sea. Their time is spent feeding off the shaggy bottom or running down the finny tribes, riding the tempest, asleep on the billows, haggling for the offal from the offshore fishing boats and gleaning the wild, restless waves as they toss about. How lonesome the ocean is without them and how the observer misses them when they fail to appear!

Dayton Stoner, Naturalist

ALBERT R. SHADLE
Department of Biology,
University of Buffalo

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A friend pays tribute to the late State Zoologist who did much to advance the study and appreciation of bird life

TO THE HONOR ROLL, the BULLETIN TO THE SCHOOLS this year adds the name of Dr Dayton Stoner, who from 1932 to 1944 was the State Zoologist in the New York State Museum and who was an ardent supporter of the BULLETIN TO THE SCHOOLS. During those 12 years part of his responsibility was to invite a few of those interested in bird study throughout the State to write original papers on birds for the annual Arbor Day and Bird Day issue of this magazine. A timely, interesting and educational article on some phase of bird life by Doctor Stoner was always quietly tucked in among other articles contributed by his friends and associates. Here again was another little ornithological nugget slipped in for good measure by the man who never missed an opportunity to advance the study and appreciation of bird life. Since this magazine is sent to all schools, colleges and libraries of the State of New York, Doctor Stoner's thoughtful, earnest, thorough investigations, and the very interesting manner in which he always presented them, were afforded a wide field of reception and brought pleasure and inspiration to great numbers of students and teachers.

Doctor Stoner died on May 8, 1944, at his home in Albany. Death was caused by coronary occlusion. He is survived by his wife, Lillian R. (Christianson) Stoner, whom he married in Iowa City in 1912, and by a sister, Nellie D. Stoner, of Denver, Colo.

Dayton Stoner was born in North Liberty, Iowa, on November 26, 1883. His early years were spent in that area, where he attended and was graduated from the public schools. Afterwards he attended the State University of Iowa, from which he received his B.A. degree in 1907, M.S. degree in 1909 and his Ph.D. degree in 1919, and was a member of the faculty for 20 years. He began as an instructor the year following his graduation and was advanced to the rank of assistant professor. In 1926 Dr Stoner gave at Iowa what was probably the first course in ornithology presented over the radio. This was in the nature of an extension course and consisted of a series of 12 radio lectures; examinations were taken and university credit was given.

Dr Dayton Stoner

During the summer of 1912 he was employed in insect studies and control work for the State College of Iowa at Ames. He spent the summer of 1914 teaching entomology and ornithology at the Okoboji Lakeside Laboratory of the State University of Iowa. The summers of 1919 and 1920 were occupied in teaching the same subjects at the Douglas Lake Biological Station of the University of Michigan.

From 1928 to 1931 he was a field assistant in the Federal Bureau of Entomology. During these years his summers were spent as field ornithologist for the Roosevelt Wildlife Forest Experiment Station in New York. The winters were spent in Florida, where he worked on *The Birds and Insects in the Celery Fields,* a study in which he examined and reported on the food contents of 500 bird stomachs. This most excellent report is as yet unpublished.

Doctor Stoner's earlier years were marked by a primary interest in entomology, but secondarily he was interested in mammals and birds. This fact gave him an opportunity to participate in three important expeditions sponsored by the State University of Iowa. The first expedition went to Vancouver in 1913, the second to Barbados and Antigua in the West Indies in 1918, and the third to the Fiji islands and New Zealand in 1922. He served as ornithologist and entomologist on these expeditions.

In 1932 Doctor Stoner became the State Zoologist in the New York State Museum, which position he held at the time of his death. He filled the office with great distinction, and by his museum work, his publications, his cooperation with colleagues and the heavy correspondence which he received from teachers, students and those generally interested in the subject, he contributed generously to the zoological sciences of the State and the Nation. Whether the question was simple or profound, it was treated with the same kind, courteous interest and every aid at his command was used to give information and helpful suggestions to the inquirer. This brought him a host of friends throughout the country.

Doctor Stoner was an enthusiastic, ardent and devoted teacher whose influence upon his students was wide and deep. Outstanding points of his work were thoroughness, accuracy and meticulous and systematic attention given to detail. He was known both nationally and internationally for the breadth and excellence of his research and for his publications.

At this time his publications number 174 but there are several others which are in the process of publication and will appear later. The wide range of subjects treated in these publications shows his great diversity of interest and his versatility. The earlier publications are predominantly entomological with an occasional paper on mammals or birds, but the later papers are mostly ornithological. There are 115 papers on birds, 29 entomological papers, with an approximately equal distribution of papers on mammals, general subjects and on highway mortality. He was a pioneer in observing animals killed on the highways and I believe was probably the first one to publish reports on these observations. Although his first paper on mortality was published in 1925, he continued his observations and published 14 papers on this subject; the last two appeared in 1943. These papers attracted considerable attention, both here and abroad.

He was especially interested in the bank swallow and published some 16 papers on this species. He studied the growth, body temperatures, longevity, distribution and many other items of interest of this species. He studied this species more thoroughly than any other investigator. Some of his studies on the bank swallow were duplicated on the house wren, cliff swallow, barn swallow and phoebe. In his bird studies he was also an ardent birdbander and from this work he had some extremely interesting returns.

Several of the University of Iowa Service Bulletins which he prepared on *Winter Birds, Bird Migrations, Spring Birds, Summer Birds* and *Planting for Birds* had to be reprinted several times to supply the demand for them.

Probably his finest published work on birds, a book of about 500 pages, was his *Ornithology of the Oneida Lake Region*, which was published in the Roosevelt Wildlife Annals in 1932. His *Rodents of Iowa* (1918) was a widely used reference book, especially in the universities and colleges in the Upper Mississippi valley. The *Scutelleroidea of Iowa* (1920), a publication of 140 pages, was his doctor's thesis. His entomological collections are to be deposited in the United States National Museum. Not only was his work held in high esteem among his colleagues in the United States, but it brought him many commendatory letters from widely scattered foreign scientists.

Accounts of Doctor Stoner and his work are to be found in *American Men of Science, Who's Who in America, Who's Who in New York* and *Who's Who in the East*.

He was an affiliate of the American Association for the Advancement of Science, a charter member of the American Society of Mammalogists, a member of the American Ornithologists' Union (member class), National Audubon Society, Massachusetts Audubon Society, Wildlife Society, Wilson Ornithological Club, Northeastern Bird Banding Association, Iowa Academy of Sciences (fellow), Iowa Ornithologists' Union and the Society of Sigma Xi (of which he was secretary for two years at the University of Iowa).

Doctor Stoner was a kindly man with a quick wit and a ready smile. He was thoughtful, considerate, generous and always ready to lend a helping hand in any way he could, to the amateur or to the specialist. Many young scientists trace their interest in science and research to his inspiration and encouragement. The scientific societies of which he was a member have sustained a heavy loss. Their activities are the richer for his having labored among them.

During the many years of cordial and sincere friendship which I have enjoyed with both Doctor and Mrs Stoner, there is one point that stands out above everything else. Here were two people deeply devoted to each other and to the things in which each was interested. They were inseparable in work or play, at scientific meetings or in the field. Throughout their married lives they worked together and built together, with one aim and one result: eminent success. Mrs Stoner accompanied Doctor Stoner on the three expeditions and for the past 30 years collaborated with him in collecting data in the field and working up the materials. Mrs Stoner is now busy completing his unfinished notes and papers.

Acknowledgment

This Arbor Day and Bird Day number of the BULLETIN TO THE SCHOOLS was compiled with the cooperation of the New York State Museum. The editor desires to express his appreciation to Dr Carl E. Guthe, Director of the State Museum; to Mrs Lillian C. Stoner, to Dr Homer D. House, State Botanist, and to others who contributed articles and photographs.

How Fast Does a Catbird Grow?

DAYTON STONER AND LILLIAN C. STONER
New York State Museum

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Mrs Stoner completes a report on this songbird's growth, which she and her late husband had studied

ONE OF OUR most adaptive and pugnacious yet brilliant songsters is the catbird. A close relative of the mockingbird, it has many of the vocal and other characteristics of that species. Its tendency to nest in shrubbery and thickets, even in the midst of bustling city activities, often brings the bird to the momentary and perhaps intermittent attention of a large number of people.

For the past several years we have been interested in a comparative study of the exact rate of increase in body temperature, weight and bony and feather growth in young songbirds from the time of hatching until the time of leaving the nest. In the 1936 Bird Day Number of the BULLETIN TO THE SCHOOLS, some of these points were discussed in connection with the barn swallow. Our findings with respect to a similar inquiry on the catbird will be considered here.

While general remarks and conclusions are based upon a consideration of all the records obtained from 15 young in four different nests, we have selected for detailed presentation here the records of a single nestling which appear to be fairly typical for the species. This nestling was one of a family of four reared in a nest 30 inches up in a Norway spruce tree about 20 feet from the edge of the water at the Watervliet Reservoir ten miles west of Albany.

Our observations (including temperature readings, and measurements) actually began with the weighing and measuring of the eggs on June 6, 1941, about three days after incubation started. Temperature readings and measurements of the young were continued on alternate days from June 16th, when the bird was approximately 23 hours old, to the time it was almost ready to leave the nest on July 26th. Early in life all four young in this family were furnished with the official United States Fish and Wildlife Service numbered metal bands. For the sake of brevity, however, the subject of this discussion will be referred to as "Nestling A."

Photograph by Guy A. Bailey
Adult Catbird Near Nest

Rate of Weight Increase

Nestling A hatched from a bluish egg 24.5 millimeters long by 18.5 millimeters in its greatest diameter which weighed 4.1 grams, the approximate equivalent of the weight of one sheet of this publication.

At the time of our first observation (10.20 a. m., June 16th) this catbird had

been out of the shell approximately 23 hours and weighed 5.9 grams. During the succeeding ten days A's weight increased gradually at the approximate average rate of 2.3 grams daily. As a matter of fact, its maximum weight of 29.4 grams was attained when the bird was only nine days old. A slight decrease in weight was apparent in the young in this species like that of the barn swallow and flicker immediately preceding the time of leaving the nest.

The adult catbird has an average weight of 35 to 36 grams. This is comparable to a little less than a half the approximate weight of this magazine.

Rate of Bony Growth

Next we will consider the growth of two of the bones, namely the tarsus and the ulna. Their rate of development is rather slow. The first measurement of the lower leg or tarsus of Nestling A when one day old on June 16th was 6 millimeters (slightly over ¼ inch), on June 25th this bone had grown to the maximum length of 22.5 millimeters (⅞ of an inch). The ulna, the bony part of the forearm which bears the secondary flight feathers, increased from 8 millimeters to 26.5 millimeters in ten days, or at the average daily rate of approximately 1.9 millimeters; this is a little more than that for the tarsus, which was about 1.7 millimeters.

Photograph by Dayton Stoner

Catbird, Age Nine to Ten Days

Photograph by Dayton Stoner

Ventral Side of Wing of Catbird, Age Ten Days

Rate of Feather Growth

The outer primary (wing-feather) and outer tail-feather will now be taken up to give us a concept of feather growth. When Nestling A was three days old the outer primary was estimated in length as .5 millimeter; it increased to 5 and 22 millimeters respectively when 5 and 10 days of age. This makes an average growth of 2.1 millimeters a day and is not so great as with the barn swallow, which was 4.3 millimeters. The most rapid growth was between the fifth and ninth days, which amounted to 15 millimeters.

As with other birds during development, the vane or web of the feather is contained in a horny tube or sheath, and as the feather grows a portion of it extends beyond the sheath. When Nestling A was nine days old, this was 3 millimeters and next day it was 11 millimeters. Since portions of this outer sheath is easily broken off, this distance is quite variable, as was evident in our records of other individuals of the same brood.

In this species the middle and outer tail-feathers are nearly equal, so we will consider only the measurements of the outer tail-feather. When Nestling A was five days old, we measured this feather as 1 millimeter in length. It increased to

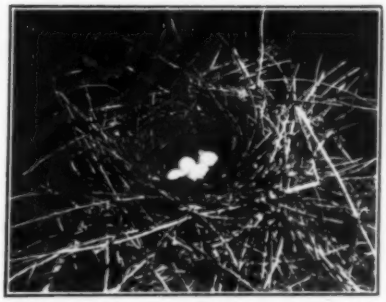
8 millimeters in four days and to 10.5 millimeters in ten days. This makes an estimated daily growth of 1.9 millimeters between the fifth and tenth days, while that of the barn swallow had an average of 3 millimeters a day.

Rate of Increase in Body Temperature

It is reasonable to expect that newly hatched birds without any feather covering would have a lower and more variable temperature than adults with complete plumage. It is also well known that young birds just out of the shell have a very low temperature and in order to survive need the protection afforded by the parents in brooding. As the feathers grow, their temperatures increase and they depend less on parental warmth.

Our temperature readings were made with a non-self-registering type of mercury thermometer of the Fahrenheit scale which is inserted gently well down into the proventriculus of the bird. The instrument was thrust in quickly and without difficulty immediately upon our arrival at the nest. Since a bird's digestive tract is nearly straight it does not seem to harm them when we take their temperatures in this way.

Five readings were made upon Nestling A; the first two were taken immediately after flushing away the brooding adult, and the last three were taken when no parent was seen near the nest. Temperatures of birds average much higher than ours; their rate of metabolism is rapid; studies have been made showing the correlation between metabolism and temperatures of different degrees. We have a few records showing newly hatched birds to have a very low temperature such as 90° for an hour-old bank swallow, and 94.4° for a barn swallow of the same age. Nestling A, however, registered 101.6° when one day old, 103.2° two days later, 106.1° on the fifth day, 107° on the ninth day and 107.4° on the tenth day. Some authorities have recorded 108.7° for adult catbirds.



Photograph by Dayton Stoner

Nest and Eggs of Catbird in Norway Spruce, Two and One-half Feet Up

Eaton in *Birds of New York* gives the following measurements for the adult catbird: length, 8.5–9 inches; wing, 3.5–3.7; tail, 3.6–4; bill, .65.

The plumage of the two parents is the same and the feathers of the immatures soon show the prevailing color of slaty gray with blackish crown and tail, and chestnut under tail-coverts.

Conclusion

Our records give the nest life of young catbirds for a relatively shorter period than those of the barn swallow. They also show that the greatest gain in weight, temperature and bony structure is most apparent during the early part of nest life; after these have attained a certain proportion, the feather growth becomes evident and is quite rapid until flight ability is attained.

Try the Red-Winged Blackbird

ESTHER MEAD CURRIER
Oriskany Central School

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A teacher suggests that classes interested in bird study start with the redwings

THERE MUST be other teachers who want to take their classes out to study birds but who hesitate because they wonder where to start. I felt that way and I suggest you try the red-winged blackbird. Or perhaps you have found that every time you do take out a group of children the birds disappear and their nests are too high to see into. If you'll try the redwing you will find them easily and their nests will be abundant and low.

In New York State latitudes March or early April is the time to get the children acquainted with the redwing's haunts and calls. From the soggy edges of marshes and swales near your school you should have no trouble seeing their flashing red shoulders almost any time of day, except, perhaps, in early afternoon when the birds may be feeding on drier land. As you approach their marsh the birds may whistle at you and they certainly will scold. As you retreat they will go back to shouting their *O-gurgle-ee* from the cattails and bushes.

The birds you see earliest will probably be males that will go farther north. But the ones that will nest in your marshes will be on hand by the end of April. When the children are sure that they can identify the redwings by their calls and their flaming shoulders let them locate for you some accessible spots where the birds seem to be — a tiny marsh, perhaps, with a secure bottom and water not over a foot deep. Redwings are often associated with cattails but a wet hollow with clumps of sedges pleases them too.

In mid-May go nest hunting in the hollows you have chosen. Wait for a warm day when you can go into water that is still cool. Wear old shoes or go barefoot and expect to be wet and a little muddy. If you haven't introduced the children to the female have them watching for the gray-brown bird that may rise, scolding, from the place you are to visit. Be as inconspicuous and quiet as you can with lively youngsters. When the male redwings discover you and spread the alarm, run toward your marshy spot with all the confusion you can create. The females will often fly straight up from their nests. This is one advantage in trying redwings. Other birds will often run some distance from the nest before flying.

To avoid destroying nests or trampling down vegetation unnecessarily have only one or two children search the areas from which the birds flew up. Warn them to disturb cattails, bushes or sedges as little as possible. For an exposed nest can also be found by enemies of the birds, such as marsh wrens, which might poke holes in the eggs, or sparrow hawks, which in a busy season would not hesitate to add young redwing to their dinners. If the first place you try disappoints you, go to another until you have a nest that can be easily observed by the children.

Any good book of bird life histories (such as Arthur A. Allen's *The Golden Plover and other Birds*) will make suggestions of things to watch for in the everyday life of redwings:

Is there one female to a male or has he a harem?

Do the young grow up in about 11 days?

Do the young pop up their heads when you jiggle the nest?

Do they still do it four days later?

Photograph by Esther Mead Currier

Do the Young Pop Up Their Heads When You Jiggle the Nest?

Does the male seem to have a definite boundary for the territory he defends?

If your children are interested enough, try constructing a blind. In it you may have the fun of watching the female feed the young. Wood or pipe can be used to make a portable framework to hold a covering of burlap or some neutral colored material. Have it high enough so a person can sit inside on a box. When the young are at least two or three days old set up the blind some 15 feet from the nest. Weighting the edges of the cloth with stones will keep your blind from being overturned or from flapping in the wind and frightening the birds. Leave it alone for some hours.

Photograph by Esther Mead Currier

Weight the Edges of the Blind with Stones

If the female flies off the nest when you return she is probably ignoring the blind and it will be safe to move it three or four feet closer. Keep it weighted with stones even though it is standing in water. Repeat the moving on the next day, so that by the third day you can have it some three feet from the nest.

When the bird is again accustomed to it go to the blind with some of your class and settle one of them inside on a box or stool so he can see the nest from a small opening in the side. Caution him to move as little as possible and not to come out until you return to the blind. Then go out of sight with the children and well beyond the area in which the birds scold at you. Fifteen or 20 minutes should be long enough to leave a child in a blind. With such a blind last spring we let the children stay in the blind ten minutes before we returned. For each of six children the female returned three times to feed the young.

Photograph by Esther Mead Currier

Eggs Are Fragile; Leave Them Alone

Just a few cautions if you haven't done nest hunting before:

If the young have just hatched don't come back for two or three days. The parents may desert.

Do not remove permanently any vegetation that may shade or conceal the nest.

Eggs are fragile. Leave them alone.

If one marsh does not yield what you want, another one may. Try redwings!

The Tufted Titmouse in New York State

WILLIAM M. GROESBECK
Hornell

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Are these woodland birds of warmer clime extending their range to parts of New York State?

THE TUFTED TITMOUSE, the yellow-breasted chat and the cardinal are birds characteristic of a more southerly life zone than is found in most sections of New York State. In recent years many have become familiar with the cardinal, and some who never saw a chat in their youth have added it to their list. The tufted titmouse, however, has remained usually as a bird they still hope to see.

The yellow-breasted chat is truly migratory but the cardinal and the titmouse are of the hardy, adventuresome pioneers among birds that are continually venturing northward of their accustomed range and establishing outposts from which during favorable years their population gradually makes itself noticeable. Then, other hard winters come, most of the pioneers may perish and so the spread of the species is held in check. As is the chickadee in a northern clime, so is the titmouse a common woodland bird of more southerly states. Like the chickadee, it often appears close to human habitation and accepts food from winter feeding boxes. Most records of its appearances have been in those portions of the State bordering on New Jersey and more rarely, near the Pennsylvania border. The proneness of the species to wander, however, leads to appearances far northward of its established range. Therefore the tufted titmouse may be seen in many areas of the lower half of the State at unexpected intervals.

The tufted titmouse is easily identified. Peterson describes it as smaller than a sparrow, and states that "no other small gray mouse-colored bird has a crest." Compared to the black-capped chickadee, it is a little larger, is gray above, whitish beneath and rusty in color on the flanks; the crested head and large dark eyes are strikingly evident.

It is interesting to note the recorded distribution of the bird in an earlier day and compare it with the present-day occurrence. The local lists of Eaton's *Birds of New York* show that it was present in the southeastern portion of the State in 1844. There are no early records of it in the Hudson highlands, central or western areas, or in the Catskills up to 1890. Nuttall in 1891 gives its range as from about the fortieth parallel (Philadelphia) southward. Other authors describe it as rarely occurring north of New York City except as an accidental wanderer. Eaton reports the titmouse not only in the vicinity of New York City but its sporadic appearance at Rochester (Monroe county) in 1903, Brockport (Monroe county) in 1908 and Geneva (Ontario county) in 1913. In later published reports the bird was found in Erie county by Bourne in 1921, at Jamestown (Chautauqua county) by Peterson in 1926, at Allegany State Park (Cattaraugus county) by Saunders in 1934 and in Yates county by Spiker in 1936. The files on the distribution of birds at the State Museum reveal sight records at Walton (Delaware county) in 1913, at Goshen (Orange county) in 1939, at Winterton (Sullivan county) in 1942 and at Kerhonkson (Ulster county) also in 1942.

For more than 40 years members of the National Audubon Society have conducted a nation-wide annual count of the numbers of all species of birds present in their local areas during a definite period of the Christmas season. These records contain a vast amount of statistical information upon the numbers of any given bird within a definite area upon a predetermined date. As an index of the presence of the tufted titmouse as a winter resident this Christmas Bird Count for New York State is extremely interesting. The records available for study have been only those of 1935 through 1943.

The relative abundance of the tufted titmouse within its established range is suggested by the records from Princeton, New Jersey, where during the nine-year period (1935–43) from 29 to 80 individual birds have been found on the day of the count. A sharp definition of limit of range is suggested by the presence of only four to 12 individuals on the day of the count in the Bronx-Westchester area. Other than these birds the Audubon count shows no consistent occurrence of the tufted titmouse even in southeastern New York State. All records for the State as published in the Christmas Bird Count are sporadic in distribution: one bird seen at Port Chester (Westchester county) in 1936; four in Piermont marsh and Northvale swamp in 1937; one in Brooklyn in 1938; three on the Hudson River shore in Rockland county in 1941; two in Buffalo (Erie county), again one in Port Chester and one on Staten Island in 1942; and none of the birds seen, except in the Bronx-Westchester area, on the day of the count in 1935, 1939, 1940 and 1943.

Like many bird rarities, my first sight of a tufted titmouse came as a complete surprise in the bottom lands of the Genesee river at York Corners, town of Willing, in Allegany county. Here Paul Davies, a Wellsville merchant, has created a private wild-bird sanctuary, and has added the tufted titmouse to his collection of superb motion pictures of over 80 species of birds. In the winter of 1943–44 at least seven titmice were in the vicinity of his lodge and fed regularly with the chickadees and nuthatches. All disappeared shortly after the first of April and Mr Davies found no evidence of nesting. During the current season three birds have appeared to the present date (January 21, 1945). My second sight of a tufted titmouse October 14, 1944, was in Red Spring Hollow, town of Canisteo, in Steuben county. A single titmouse was with a late afternoon congregation of chickadees, song sparrows, white-throated sparrows, juncos and goldfinches in brookside willows. Because of rationed gasoline I have never returned to the site to attempt a confirmation.

These two sight records, one confirmed by photography, constitute two more sporadic appearances of the tufted titmouse in the State. All the Audubon Bird Count records as well as these are of wintering birds. True extension of range would seem to rest upon evidence of nesting. Furthermore, before claiming an extension of range for this species we should consider the fact of an increased number of observers as well as better instruments of identification when comparing present-day occurrence with the early records. The compilers of the local lists in *Birds of New York* certainly did not equal in numbers the enthusiastic "census-takers" of the Audubon Christmas Bird Count, and it is well to consider how many tufted titmice they might have found with a similar organization of more field observers. Notwithstanding this discrepancy, it would still seem that there may be an apparent extension of the range of the tufted titmouse northward especially in the western portion of the State. A series of severe, "old-fashioned winters," however, would tend to determine whether or not these hardy, adventuresome pioneers really have extended their range and are definitely established northward of a former limit.

The New York State Ranger School

JAMES F. DUBUAR
Director

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This school in the heart of the Adirondacks trains young men for practical work in the woods

IN 1912, a short time after the establishment of the New York State College of Forestry at Syracuse University, the college was presented by the Rich Lumber Company with an 1800-acre tract of land in the western Adirondacks near Wanakena. Later, additional gifts by others raised the area of the tract to 2330 acres. The Rich Lumber Company specified that the College of Forestry should establish a forest experiment station but Dr H. P. Baker, then dean of the college, wished to use the tract as a school forest on which would be located a school similar to the forest academies of Europe. To this the donors readily agreed.

Doctor Baker had finished his forestry education in Germany and was thoroughly familiar with the European plan of forestry education. There, it had been found that training other than that given by the professional schools was necessary. In each country where forest resources were of any account one or more vocational or semiprofessional schools existed. These schools trained men to do and to supervise in the woods all of the kinds of work that must be done where repeated crops of timber are raised on forest lands.

Within a short time a site for the school was chosen near the southeast corner of the tract, fronting on an arm of Cranberry lake. A number of frame buildings were constructed and in December 1913 the first class completed its work.

The New York State Ranger School is a part of the New York State College of Forestry. It has no part in teaching the professional course but, rather, confines its activities to training young men for practical work in the woods. Its time is about equally divided between classroom periods and practical exercises. Its schedule requires students to attend recitations, lectures and field, laboratory and drafting room periods for 43 hours a week. The curriculum includes plane and topographic surveying, drafting, forest mensuration, forest improvements, forest protection, forest management, silviculture, nursery practice, seeding and planting, dendrology, botany, logging, lumbering and utilization, forest entomology, wood identification, elements of forestry, typewriting and bookkeeping.

The school year opens on the third Wednesday of March and ends on the third Wednesday of the following February. During that period there are two recesses of two weeks each, one over the Fourth of July and one at the time of the Christmas holidays. The period of instruction is 44 weeks, somewhat longer than the usual school year, and the course is completed in one year. All students live at the school, which has accommodations for a class of about 50 members.

For many years the Ranger School required for entrance only an eighth grade education, although most of the applicants were high school graduates. Now, high school graduation is required. The intent in raising this requirement was not to limit enrolment. Rather, it was done because it is now unusual for young men to fail to finish high school and those who are not high school graduates find the Ranger School course too difficult. In the earlier years of the school's life a fair percentage of boys of high school age

The Largest Trees in This Plantation on the Ranger School Forest Are 40 Feet in Height and 10 Inches in Diameter

withdrew from school for reasons other than difficulty with their studies and during that period some young men with the capacity to learn but without much high school preparation did very well at the Ranger School.

In giving practical work in the field it is always a great advantage for exercises to be carried on under the same conditions as prevail where forestry work is in progress. The Ranger School Forest and near-by areas of state-owned land provide the school with a variety of forest conditions that make the practical part of its instruction particularly worth while.

On the administrative site a forest tree nursery was established in 1914. Nursery stock, mostly of conifers, is grown to an age of four years. Also, a small amount of stock is kept in the nursery for a longer period for ornamental planting. The nursery work is done entirely by students in connection with their course in nursery practice, seeding and planting. The nursery produces about 60,000 four-year-old trees each year. Each student takes part in all of the nursery operations: preparation of seed beds, transplanting of two-year-old seedlings in the transplant beds, weeding, cultivating and general nursery maintenance work. Seed of the local species that are grown in the nursery is collected by teachers and students on the Ranger School Forest or near-by properties.

While spring nursery work is being accomplished all of the four-year-old trees are dug, sorted, packed and transported to planting sites on the Ranger School property, where students organized in planting crews, with teachers acting as foremen, obtain experience in forest planting. The old stand of virgin timber on the Ranger School Forest was cut sometime before the College of Forestry obtained title to the property, and in 1908 and 1910, following the logging, forest fires swept all but a few swamp

areas and a small acreage near the administrative site. The flats and south slopes were so severely burned that all forest growth of the good timber species was destroyed. The woody vegetation that became established after the fires was worthless for timber production. When the College of Forestry obtained the property some 1050 acres of north slopes and moister areas were covered with a young stand of good hardwood timber species but an area of equal size needed forest planting if it were to become productive short of several hundred years. The annual plantings by successive Ranger School classes along with the reforestation work done by a CCC camp formerly located on the property have brought the barren areas back into production except for some parts where original plantings failed. These latter have been partly replanted and the next few Ranger School classes will complete the job.

The species used in the reforestation projects are several of the pines and spruces that grow well in this section of the State. Some of the earliest of the plantations contain trees now 40 feet in height and ten inches in diameter. In them some thinning work has been done and the material taken from one plantation of red pine was large enough to be used for pulpwood. It was hauled to the College of Forestry at Syracuse and some 15 tons of newsprint paper were produced in the college pulp and paper laboratory.

From time to time students and paid crews have worked in the plantations cutting brush, aspen and other inferior native hardwood species that were interfering with the growth and development of the planted trees, pruning limbs from the first log length so that annual growth would be clear wood free from knots, thinning where trees were crowding and needed more space, and on insect pest control work to offset the inroads of the white pine weevil which causes severe damage to white pine and Norway spruce plantations. On the areas of second growth, native hardwoods, the students have made thinnings and improvement cuttings. Also, a great deal of forest cultural work of this kind was done by CCC crews between 1933 and 1937. The school forest is now in a productive condition. For some time in the future, care and protection of the growing timber will be the principal work on the forest. After a period of years, however, when the older plantations and native hardwoods have reached merchantable size, an annual cut will be made of the mature crop. By that time the forest will have been subdivided and a schedule drawn up listing the locations of stands and amounts of timber to be removed in the annual logging operations. This is the ultimate aim of forestry practice on any such piece of forest property. Once that day comes an annual income will be realized that will more than offset the cost of the work that has taken place in earlier years. That portion of the income over and above the cost of raising the crop should bring a substantial profit to the school.

Wherever a forest property is handled to produce all of the values that may be obtained from it, all parts must be accessible. Roads and trails must be built and maintained so that all the forest work may be accomplished economically. If forest fires occur there must be no time lost in transporting fire fighting crews to burning areas. Forest planting, thinning, pruning and all other work will cost less if a minimum of time is lost in getting men and materials to the parts where the work is to be done. Also, when logging is under way a good road system is necessary so that logs, pulpwood or any other forest products can be transported cheaply. The Ranger School Forest has a good road and trail system. The trails have been built entirely by students, and each student spends some time in forest

road building and maintenance, all of this in connection with the course in forest improvements. At present there are about ten and one-half miles of gravel roads on the property and no part is more than three-eighths of a mile from some point on a road.

Practical work in surveying and mapping takes place largely on the Ranger School property. Surveying is the longest single course taught, and a great deal of field work is necessary to make each student familiar with the handling of surveying instruments, methods of work and the organization and duties of surveying and mapping crews. The success of Ranger School graduates in this work can be traced to the amount of actual surveying they have done while in school along with the fact that the field exercises have been given under the same conditions that prevail wherever forest land surveying and mapping are done.

For timber estimating and cruising there are several tracts of virgin timberland within easy distance of the Ranger School. In fact, two such areas are within a few hundred yards of the school buildings. These areas are not on the school forest but are a part of the New York State Forest Preserve. Each autumn the students spend more than two weeks in timber estimating. During this time there is no classroom work; the entire time is spent in the woods. Students work from 8 o'clock to 5, carrying their lunches with them and eating wherever noon overtakes them. This work appeals to most students and helps develop in them a spirit of self-reliance that can not be obtained from classroom work alone.

Ranger School graduates have found opportunities for employment with both public and private agencies. More than 70 per cent of them are employed at work for which they have been trained. Some have followed surveying but the great majority are engaged in forestry. They have been employed in the woods by lumber companies, pulp and paper manufacturers, conservation and forestry departments of various states and in the United States Forest Service and some other federal departments. The amount of time they have spent in practical work while in school and the nature of their school schedule — eight hours of classes and field work a day — have given them such a knowledge of their work and such a proper attitude toward it that they fit into their jobs without having to pass through a protracted period of adjustment.

Some 15 per cent of the graduates have attended college after finishing at the Ranger School. This may seem like placing the cart before the horse. In formal education it is not the usual thing to obtain practical training before the theoretical, but it is a surprising fact that the men who have done this are in unanimous agreement that they would follow the same course of action again. Also, their opinion is borne out by that of their employers who seem to feel that the forestry college graduates who obtained their first forestry training at the Ranger School are somewhat better prospects than those who have not done so.

The New York State College of Forestry at Syracuse University and other forestry colleges east of the great plains now give Ranger School graduates, who enter to study for a professional degree, enough advance standing for their Ranger School work so that they may finish the college course in three years. Practically all of these schools require attendance during one full summer at a forestry summer camp and Ranger School men are relieved from this.

The Ranger School, therefore, offers an opportunity to those who wish to engage in practical forestry work in the woods and, also, to those whose desire is to obtain a knowledge of practical work and life in the woods before entering college to study for the professional forestry degree.

George DuPont Pratt, Conservation Commissioner, 1915-21

WILLIAM G. HOWARD

Director of Lands and Forests, New York State Conservation Department

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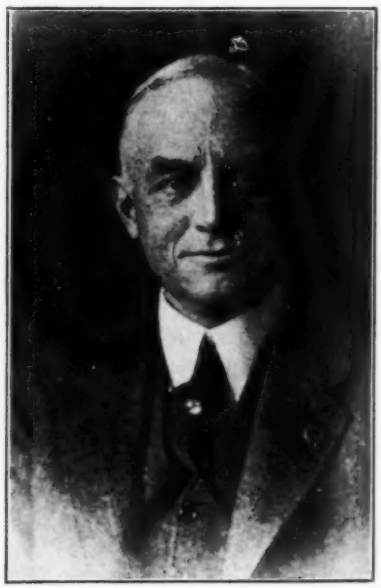
New York owes much to this staunch conservationist for his additions to the Forest Preserve and his promotion of forest recreation

CONSERVATION in New York State owes a huge debt of gratitude to the late George D. Pratt for his outstanding service as Conservation Commissioner from 1915 to 1921. Appointed by Governor Charles S. Whitman in the early spring of 1915 for a term of six years, Commissioner Pratt assumed his position with an impressive record of participation in a wide range of philanthropic activities, and had already demonstrated a keen and intelligent interest in various phases of conservation. The unbounded enthusiasm with which he attacked the problems of the Conservation Department and the accomplishments of his administration are matters of record in the departmental reports.

Mr Pratt was born in Brooklyn on August 16, 1869. He attended Adelphi Academy and was graduated from Amherst College in 1893. He then entered the employ of the Long Island Railroad, and later became associated with other business enterprises. Throughout his life, however, Mr Pratt devoted a generous portion of his time, energy and income to philanthropic undertakings, such as Pratt Institute, the International Y. M. C. A., the Boy Scouts of America, of which he was one of the founders, the Public Recreation Commission of the City of New York and numerous sportsmen's organizations.

Mr Pratt was an enthusiastic hunter, fisherman and photographer; and his collection of trophies and pictures bore ample testimony to the skill he applied to these hobbies. Moreover, through these interests he had acquired much valuable training for the job of Conservation Commissioner.



George DuPont Pratt

The Conservation Commission, as originally created in 1911, consisted of three commissioners. It had three deputy commissioners, a secretary and a counsel.

The Legislature of 1915 amended the law to provide for a single commissioner with one deputy commissioner, a secretary and a counsel. Mr Pratt was the first commissioner appointed under the amended statute. He brought to the job not only an understanding of the objectives of conservation but also an unalterable determination to operate his department under a policy wherein efficiency outweighed political considerations.

At that time the Conservation Department consisted of three divisions, Lands and Forests, Fish and Game, and Waters. The Division of Saratoga Springs was added in 1916. Commissioner Pratt was quick to see the possibilities for development of the activities of all four divisions.

In the Division of Lands and Forests he found a forestry program well started but needing the stimulus of increased public interest which would produce larger appropriations to provide needed forest protection facilities and also to enable the department to give more encouragement to needed reforestation. To arouse greater public appreciation of the needs of conservation, Commissioner Pratt was the first to use motion pictures in the department's educational effort. He started a departmental magazine called the "Conservationist" to acquaint the public with conservation work. He personally financed an organization of "Conservationists" and provided gold-finished buttons free to all citizens who signed a simple "Conservationist's Creed" which he originated. The following rime composed by Mr Pratt was much used in the prevention campaigns:

Only a man in a forest green,
Only a match that was dropped unseen,
Only a flame, some leaves and wood,
And only a waste where the forest stood.

This publicity was effective. Forest protection was greatly improved through the construction of permanent steel observation towers for use in fire detection and through the purchase of more and better tools for fire suppression. Fire losses were markedly reduced.

Control measures were initiated against that serious threat to the State's white pine, the white pine blister rust.

State nurseries for the production of forest planting stock for reforestation were enlarged, and the output of trees was considerably increased. This resulted in the reforestation of thousands of acres of State Forest Preserve lands in the Adirondacks and Catskills, as well as more sales of trees at cost to private land owners for reforestation.

Commissioner Pratt will probably be remembered more for his contributions to the State Forest Preserve and forest recreation generally than for any other single achievement. He was instrumental in getting a bond issue of $7,500,000 for the acquisition by the State of additional lands for the preserve. With funds provided by this bond issue, over a quarter of a million acres of land were acquired, including areas of outstanding importance for recreation, the protection of scenery and watersheds and for consolidating state holdings. We have the word of one of the Nation's leading foresters that this large sum of money was spent efficiently and economically and that excellent judgment was used in the selection of the lands acquired.

The Forest Preserve was created in 1883 with the idea that one of its functions would be to provide forest recreation for the public, but for the first 30 years relatively few persons availed themselves of the opportunities afforded by this large area of forests, lakes and mountains. The principal reason for this was that camping facilities were limited and not many people knew where the state lands were and what they had to offer. It is rather surprising that until 1920, although the preserve had been in existence for 37 years, no steps had been taken deliberately to develop the recreation facilities of the preserve.

It remained for Commissioner Pratt to appreciate the need for development and to begin the job. In 1920 he obtained a pitifully small appropriation, which he

eked out by using existing departmental personnel as much as possible. A system of public camp sites was laid out, and work on some of these camp sites was started. Important pedestrian trails to points of interest in the interior of the Forest Preserve were constructed and marked with a system of signs and so-called "trail markers" which any person could follow even if he were not a woodsman. Adirondack open camps were constructed at strategic points along these trails. Then, for the guidance of the public, a series of pamphlets known as Recreation Circulars, giving full information on camping facilities, trails and canoe routes, was published and given wide distribution. Anyone who is familiar with the great number of people using the Forest Preserve today will appreciate that the policies inaugurated by Mr Pratt are still in effect substantially unchanged.

In the Division of Fish and Game, Commissioner Pratt increased the efficiency of law enforcement by putting the game protectors in uniform. He extended the work of propagating fish and game for restocking the waters and coverts of the State.

In the field of water power, Commissioner Pratt worked indefatigably for the adoption of policies to protect the State's interests. Some of these policies have been subsequently enacted into law.

The Saratoga Springs Reservation was first transferred to the jurisdiction of the Conservation Department in 1916. Mr Pratt tackled with enthusiasm the task of making it the greatest spa in the world. Out of his own funds he purchased land necessary for future development and later transferred his title to the State at no profit to himself, but with a very considerable saving to the State, because of the rise in land values in the interim.

The foregoing statements emphasize how greatly the cause of conservation is the gainer by having had, during the years 1915 to 1921, a commissioner of the caliber of George D. Pratt. An affable, democratic gentleman of magnetic personality and culture, ever-active intellect and firmness of resolution, he inspired in his associates in the Conservation Department a lasting loyalty to their work. He initiated policies, the soundness of which is attested by their retention by succeeding administrations with little change.

Following the expiration of his term as Conservation Commissioner, Mr Pratt maintained his interest in conservation matters, serving as president of the American Forestry Association from 1924 to 1934. His death on January 20, 1935, was mourned by a host of friends throughout the State and Nation.

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Don't Fear Elm Disease

Elm trees may continue to be planted in this country, even in the East, in the prospect of the elimination of the Dutch elm disease, according to Dr J. H. Faull, of the Arnold Arboretum, who gives an appraisal of the situation in the October 14th issue of the *Bulletin of Popular Information*. Doctor Faull concludes with the following statement:

As a result of the fear aroused by the Dutch elm disease situation in America, some people have come to question the advisability of planting elms. The answer, especially for the eastern part of the country, is reached through an appraisal of the prospect that the disease will be eliminated. In my judgment, we can safely continue to plant elms. It is unthinkable, in view of the demonstrated possibilities of success in eradication, that the American people will abandon efforts to save one of the finest gifts of nature. Given the opportunity, I still think we can preserve our elms. But provision for that opportunity rests immediately on federal and state governments, and primarily on the insistence brought to bear by the public on those who represent them in those governments. The cost to try to save our elms is relatively small. On the other hand, if we let them go, the costs will be greater to this generation, and a noble heritage will no longer be ours to pass on to succeeding generations. Everyone can help at the moment by urgent spoken or written words, and now is the critical time for action.

Birdbanding

MARIE V. BEALS
Elmhurst

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The age of birds and their migratory habits are among the many facts learned by birdbanding

WHILE STROLLING along a woodland path you may have found a dead bird with one of its legs encircled with an aluminum band. Examination of such a band will reveal that it has two numbers on one side and on the other side it reads, "Notify F. & W. Serv. Wash. D. C." As I have stated, you will find two sets of numbers on every band. The number at the left is the year the band was manufactured, but it may not have been used that year; and the other number is the one given to the bird. In reporting a band, it is necessary to give the two numbers, such as, 44–169279.

A pupil may find such a band and bring it to the classroom. When this occurs, read the numbers carefully and mail it to the Fish and Wildlife Service together with a statement as to where, when and by whom the band was found, the cause of death of the bird, if known, and any other facts that you may know. It is not necessary to send the band, but if you wish to send it, flatten it, wrap it in paper and then send it along with whatever information you can supply. The Fish and Wildlife Service will inform you as to when, where and by whom the bird was banded.

If perchance you should catch a bird with a band, write down the numbers of the band, verify your numbers again and then immediately release the bird, of course, leaving the band on the leg of the bird; then make up your report and send it to Washington, D. C.

The banding of our wild birds is a very old idea. John James Audubon in 1803 banded a brood of phoebes. Audubon had no aluminum bands so he used silver wire to mark the birds. He was rewarded the following spring by two of his marked phoebes returning to nest where he had banded them. In 1920 the United States Biological Survey (now the United States Fish and Wildlife Service) took over the banding material of the American Bird Banding Association which had been banding birds in order to study their migration. Since the Fish and Wildlife Service has been keeping the records, more than 3,000,000 birds have had bands placed on their legs and much information has been secured through this method of bird study. We now know that many birds usually come back to the same region to nest and that they often go back to the same locality in the winter. We can tell how long some birds have lived and know the migration routes of many of our species.

Photograph by A. T. Beals

The Author with Banded Hermit Thrushes

A blue jay banded at Madison, Wis., on May 8, 1932, was trapped and released at the same locality, May 5, 1942. Another blue jay banded at Beltsville, Md., on January 15, 1942, was found dead at St Davids, Pa., on June 17, 1942.

A catbird banded at Harrisburg, Pa., on June 20, 1936, was trapped and released at the same place on August 12, 1941. This bird had also returned to the same banding station on May 7, 1937, and May 1, 1938.

A starling banded at Washington, D. C., on March 23, 1928, was caught in a pigeon coop on July 8, 1936, at Mount Vernon, N. Y.

A robin banded at Harrisburg, Pa., on September 30, 1934, was found injured at the same location on May 26, 1942.

Records indicating the possible life-span of our wild birds are accumulating in the return files for banded birds at Washington, D. C. I will mention a few of the interesting records.

A flicker banded at Lakewood, Ohio, on September 1, 1927, was found dead at the same locality on August 24, 1932.

A wood thrush banded at Demarest, N. J., on June 30, 1929, was retrapped at the same place on April 29, 1935.

A field sparrow banded at Huntington, N. Y., on May 3, 1931, was retrapped at the same station on May 2, 1932, May 1, 1933, May 16, 1934, and April 23, 1936.

A cooperator of the Fish and Wildlife Service is one who has secured a permit for birdbanding from the service and also obtained permission from the State Conservation Department, as many of the states now require that a birdbander must have a license to carry on this work. The birdbanders must make or buy their traps necessary to capture the birds but the bands are furnished by the Fish and Wildlife Service. There are several hundred active banding stations in the United States and Canada. Many of these individuals band only a few hundred birds that visit the garden, but some stations each year band thousands of gulls, ducks and shore birds. This kind of banding is usually carried on in the national wildlife refuges managed by the Fish and Wildlife Service.

The Cliff Swallow in Cortland County

HAROLD H. AXTELL

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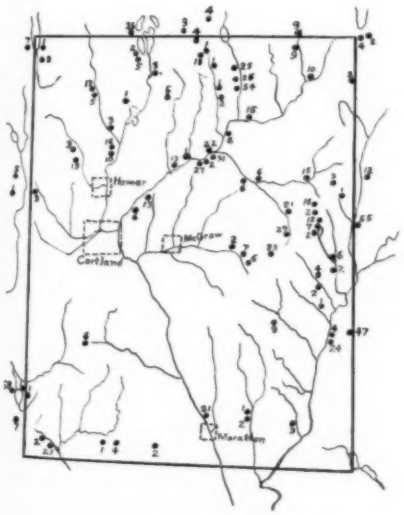
They nest outside of, not inside barns like the barn swallows, and are highly beneficial and interesting birds

THE STUDY of the distribution and nesting habits of the northern cliff swallow (*Petrochelidon pyrrhonota*) in New York State was one of the many projects in which Dr Dayton Stoner, our recent State Zoologist, was engaged at the time of his death in May 1944. One report which he had completed will appear in a forthcoming issue of *The Auk* on "Temperature and Growth Studies on the Northern Cliff Swallow." Mrs Stoner, who worked with her husband in most of his field work on birds for the past 30 years, is now attempting to finish the reports on some of their research.

Their notes on the distribution and nesting habits of this species in New York are so vast, yet so incomplete, that there will be some delay in preparing a

comprehensive report. Parts of these data in Doctor Stoner's files came from bird observers all over New York State in response to questionnaires that he sent out in 1936 and 1937. Since I was fortunate in having the time to answer my copy of this questionnaire in some detail, I have been asked to prepare the material in my report for Cortland county and vicinity as an article for this bulletin. The map showing the distribution for Cortland county and the photograph are from Doctor Stoner's files.

The cliff swallow as a nesting bird is of very uneven distribution in New York State. In spite of its name it is not known to nest on cliffs here, but utilizes barns or occasionally other buildings, usually attempting to make its gourd-shaped mud structure adhere to the outside wall high under the protection of the extending edge of the roof. From this habit it has sometimes been called eaves swallow. One might expect the bird to occur wherever there are suitable barns, mud to build nests and insects to eat. But there are hundreds of square miles that offer these facilities, from which nesting cliff swallows are absent. Although many of the preferences for a nesting site have been studied and are known, more must be learned before we can know all the reasons for the cliff swallow's irregular distribution.



Map of Cortland County Showing Location of Nesting Cliff Swallows in 1936 and 1937. The Figures Refer to the Largest Number of Pairs Present in Either Year.

The area covered in the present report includes all of Cortland county and the territory within two miles of its borders, a total of 620 square miles. About 2000 of the approximately 2500 farms in this area were visited during the 1936 nesting season, and of these, 62 sheltered a total of 496 nesting pairs of cliff swallows on their barns at the time of my first visit. This gives an average of one colony of the birds to about every 32 farms, and of eight pairs to a colony. Many additional birds were present whose nests had been destroyed and were not counted. Fifteen additional farms showed unmistakable evidence of having been hosts to colonies in previous years, but not in 1936.

In 1937 all the colonies found in 1936 were again visited and, in addition, more than half of the farms that were found not to have colonies the preceding year.

Only four of the colonies contained the same number of birds both years; 17 had decreased in the number of pairs present; 16 had increased, the differences often being considerable. Twenty-five barns occupied by cliff swallows the first year were deserted in 1937, but careful calculations showed about this same number of new colonies on buildings not occupied by them in 1936. It is of interest to note that several of the latter were on barns that showed unmistakable signs of having harbored cliff swallows' nests from years previous to 1936, which proves that the birds can desert a barn for a year or more, but are very likely to return at a later year. Three of the new colonies were on barns freshly built since the previous summer, one of these having 54 pairs of cliff swallows in its first year of existence.

About half of the 500 farms not visited the first year of the study were investigated in 1937 with the resulting discovery of 98 more pairs of birds in nine colonies which, the farmers told me in each case, had been present for many years.

In 1939 an unusually large colony of 83 pairs was discovered on an unpainted barn whose owner assured me that the birds had lived there in these same great numbers ever since he could remember.

To summarize these data: 87 active colonies have been found in an investigation that covered about 90 per cent of the farms in the area, but only about 70 of these colonies were occupied in any single year, local populations often varying greatly from year to year, while remaining about the same over the entire county.

Detailed notes were made on a number of the factors involved in the choice of a nest site for the 496 occupied nests in 62 colonies studied in 1936. For example, it was found that the east sides of barns had the largest number of nests, totaling 225. The north side had the next largest with 100 nests. It is perhaps significant at this point to recall that our summer storms normally blow from the southwest and that rain is very destructive to cliff swallows' nests.

More than half of the 496 nests, 270 in number, were on the downhill side of the barn; the smallest number of all, 50, were on the uphill side. There are several possible reasons for this. The downhill side is usually closer to the mud supply for nest building and to the habitats of the insects upon which the swallows feed, such as stream, marsh and fertile fields; the livestock usually have their entrance with its abundant flies and other insect food on the downhill side; the eaves there are usually highest above ground-lurking enemies; the disturbing process of putting hay in the barn is least usual on the downhill side.

More than half, or 263, of the nests were on structures that had never been painted; most of the rest were on barns classed as having the paint old and badly weathered, or at best in fair condition. No swallow had tried successfully to plaster its nest against the vertical side of a structure that had been painted within five years. The only nests on recently painted barns were a number that had found a rather secure resting place on the sloping inner surface of the board nailed to the ends of the rafter tails along the lower edge of the roof of some barns. This board, when present, was a favorite nesting site, as was any location that furnished a ledge for the nests.

A ledge one inch wide that was formed a few inches beneath the eaves on the top ends of the siding boards where they failed by that much to reach the roof constituted an almost irresistible nesting location. Some of the largest colonies were on barns of this rather rare sort of construction.

A summary of the numbers of pairs using the various kinds of specific nest sites follows:

Nests built in angle at top of barn-side beneath roof	270
Nests on one-inch ledge	109
Nests resting on facia board at end of rafters	101
Assorted other sites such as on old robins' nests, phoebes' nests, door tracks and 2x4 scantlings	16

The higher the eaves are above the ground, the better the cliff swallows like it, apparently. Of more than 80 colonies noted, only four had the eaves less than 20 feet above the ground or other surface such as another roof below. Two of these colonies whose nests were only about 14 feet above ground had other conditions unusually desirable.

As a rule, the farther the edge of the roof extends beyond the side of the barn, the more desirable it is to the swallows. Less than 12 inches of such overhang was insufficient except for four pairs of swallows distributed among three such barns.

Nearly two-thirds of the nests were of the conventional type, gourd-shaped with a single round entrance only large enough to permit the passage of one bird at a

Photograph by Dayton Stoner

Northern Cliff Swallows, Age 22 days

time. About one-third had a double width entrance, or less commonly two entrances 60 to 90 degrees apart connected by a narrower slit where the intervening part was not built all the way up to the roof. Among some of the unusual nests were one that was cup-shaped like a barn swallow's, another that was built around the entrance of a previously finished nest so that the occupants of the latter had to enter the domicile of their front-door neighbors in order to reach the entrance to their own, and most unusual of all perhaps was a cylindrical structure resting on a ledge with a wide-mouthed entrance at each of the rounded ends of the cylinder. I watched the birds at this nest for several minutes to assure myself that it was the nest of a single pair and that the same bird that entered by one hole could leave by the other.

On a number of occasions I observed four birds assisting in the construction of one nest, but I have never found any evidence to suggest that this friendliness continued to the point where more than one pair used a nest after its construction was complete.

Doctor Stoner was interested in knowing how the cliff swallow compared in abundance with the other kinds of swallows. After extensive field studies and painstaking preparation of data, I made the following estimates of breeding pairs for the 620 square miles (in the previous cliff swallow statistics, only birds with nests present at the time of my visit were considered, whereas the following figures also include an estimate of the considerable number whose nests had been destroyed and had not yet had time to rebuild):

Barn swallow	3200 pairs
Cliff swallow	900 pairs in 75 colonies
Bank swallow	650 pairs in 6 colonies
Rough-winged swallow	160 pairs
Tree swallow	30 pairs
Purple martin	0

(all reports turned out to refer to starlings)

A person studying cliff swallow distribution soon learns that this species is the most difficult to find because it has the smallest feeding range of any of the swallows. Rarely during the breeding season does it wander more than two or three hundred yards from its home barn, whereas on the other extreme the bank swallow, in central New York at least, is commonly seen more than a mile from its nest.

Since both cliff and barn swallows nest about barns, some consideration should be given the relations between these two species. From interviews with 43 farmers who had both cliff and barn swallows on their barns it was learned that 41 thought they were all one kind of swallow, only two farmers recognizing the two separate species. In this survey, however, no cliff swallow was ever seen to go inside a barn, and conversely, only two instances were found in central New York of barn swallows nesting anywhere except inside a building. These two nests, both with young, were a few yards apart on a facia board in a typical cliff swallow nest site. In general, barns having several occupied nests of the cliff swallow commonly contained more than the average number of barn swallows' nests.

That a mix-up sometimes occurs is attested by the fact that hybrids occasionally are found between these two different genera, a situation at one time believed impossible. I had the rare good fortune to observe one of these hybrids for more

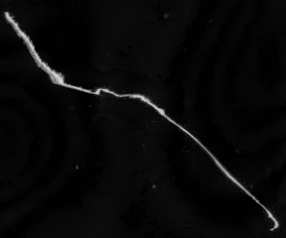
than an hour on May 15, 1938, at a little pond near Cortland under good conditions for observing details. In this individual the buffy rump and grayish hind-neck ring as in the cliff swallow were apparent, and the row of white spots across the tail as in the barn swallow. The call note rather closely resembled the latter's. The other characters, including the color of the forehead and the length of the fork of the tail were distinctly intermediate between the two species.

At three colonies observed on as many different mornings the cliff swallows did not leave their nests until from 40 to 60 minutes after the early-rising barn swallows first were heard flying about in the darkness, and most of the other birds had been singing for some time. There is a tendency for cliff swallows to retire early. An entire colony sometimes becomes inactive even before sunset.

Broods are successfully raised in only about 30 per cent of the nests constructed. There are many reasons for this. The most important is that as the nests become heavier with developing young they may fail to adhere to the surface of the barn, especially if the boards are smooth because of paint or planing, and crash to the ground. Many others are broken apart by starlings that try to force their bodies into the small entrance holes. Sometimes a single starling in a few minutes may break open an entire row of the nests. I have talked with several witnesses to this act. English sparrows in 1936 were occupying 55 nests from which they had obviously evicted the cliff swallows. The effect on the swallows is worse than this implies, however, for in every case — and I noted several — where as many as two swallows' nests had been usurped by sparrows on the same side of a barn, all the swallows on that side had deserted their nests. This sometimes involved 15 or 20 pairs. According to observers elsewhere, such wholesale desertion may not always occur so easily, however.

Although poor adhesion of nests, and activities of starlings and English sparrows are by far the most important enemies, together with prolonged rain or cold, a few others are of lesser importance. Horsehair in the lining of a nest became twisted about the legs of one of the young which became caught in the nest entrance so that it could get neither in nor out, and was blocking the way so the parents could not get to the rest of the brood. The brood would have perished but for my discovery.

Most writers state that cliff swallow colonies appear to be immune to predation by hawks, but at a large colony south of Dryden a sparrow hawk appeared to be nourishing itself almost entirely on young cliff swallows taken from nests.

Ignorant or impractical farmers sometimes destroy cliff swallows' nests. Of 43 farmers interviewed, two took much interest in their large colonies of swallows, ten others expressed definite favorable sentiment, but most were indifferent, several not even knowing there were birds nesting under the eaves of their barns. Seven complained against the birds. Of these, three disliked all swallows about the barn because the barn swallows made piles of excreta on the hay and they thought all the swallows were the same kind. The other four objected to the cliff swallow for one reason: they disliked the appearance of the small white spots produced by the droppings on the outsides of their barns. Two of these four had taken measures to destroy the colonies on their barns because of this supposed insult to the owners' questionable sense of beauty.

Since the only complaint heard against the cliff swallow was that it sometimes made white spots which in no way hurt the barn or the paint, and since this bird feeds almost entirely on flying insects many of which, if allowed to live, would annoy man and his livestock and destroy his crops, the cliff swallow is decidedly a bird to be encouraged by any farmer so fortunate as to have his place chosen as the nesting and hunting grounds of these highly beneficial and interesting birds.